

'COMPUTERWORLD

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IBM Software Shock: Program Licenses Can Cost User More Than a High Speed Printer

YONKERS, N.Y. IBM's expected unbundling announcement shook computer users when they realized that having programs (including ones such as Cobol, PL/I, or Fortran) might cost them as much as a monthly rental fee as a major unit such as a high speed printer.

Charges for application programs had been expected, but many people had not expected that languages and sorts would be either free or, alternatively,

very low priced. In fact, IBM exempted only system control programs (operating systems) from software charges, and specifically included sorts, converters, and compilers.

No certainty about the cost of software to installations was possible, because IBM announced only the prices which it said were "very widely" on 18 August (see last page). However, that did include one language-like facility, GPS, at

\$1,300 a month. This price is considerably above the cost of most of the System 360 printers.

Contradictory Reactions

Industry reaction to the announcement came quickly. It was both contradictory and fierce. Howard S. Levin, president of Levin-Townsend, which has offices in New York City, said that his company's profits for the year would be reduced because the firm would have to cut hardware leasing prices (IBM has reduced hardware leasing by 10 percent). He said that since his company had bought and paid for services, including user training and systems engineering, which the new practices will take away, he considered the situation to be "totally unfair."

Best Possible Alternative

By contrast, Eric Wagner, general manager of Informatics, said that the separate pricing of computers and services was "probably the best of possible alternatives." Wagner anticipates that Informatics will no longer have competition from IBM with so-called "free services."

Not unsurprisingly, the Justice Department decided comment on IBM's announcement, which it had accepted in principle to weaken the department's case against IBM. Altogether, there are five antitrust suits against IBM which recite a variety of alleged violations of antitrust law and particularly stress package pricing.

Alan Shalov, general counsel for Data Processing Financial and Government, said that his firm's antitrust suit had certainly not been wiped out. "There are

(continued on Page 2)



Cmdr. Hopper Honored

Navy Cmdr. Grace Hopper receives the DPMA's first Man of the Year award from DPMA President Charles E. Davis. She was honored for her contributions to the computer sciences. Other stories about the DPMA show in Montreal appear on inside pages.

New Largest System Has Mature Software

MINNEAPOLIS, Minn. The world's most powerful computer with matured software was announced last week by Control Data Corp. in an intriguing statement that it had developed both memory expansion and processing-power upgrading without involving the user in unwelcome side effects.

The system, the CDC 7600, will be available in the second quarter of next year. It is 40% more powerful than the super-scale 6600, but costs approximately only 10% more.

Control Data already has announced the 7600 will run four times faster than the 6600. However, so far it has been delivered only without software and is scheduled for delivery ahead of the schedule originally set.

In place of the usual upgrading method of increasing the speed of a computer, the 7600 has added a second 6400-type central processor so that programs can be run on either of the two systems. The software for controlling this has already been

operational on the 6500 multiprocessor for some time. To handle the requirements for additional memory, instead of increasing the amount of expensive core memory, that adds additional programs. Control Data has relied entirely on the use of its cheaper extended core memory. It has not increased the central memory over the original 1312 words.

The second central processor, which has been added to the old 6600 to make the 7600, runs exactly the same programs as the 6600's central processor.

It is not as powerful as the 6600 processor, because a

number of the features, including the multiple instruction units and the complex memory management, have not been included in the 6600.

The second operating system (continued on Page 2)

is designed to run on the S/360.

MIS released came with 32K

memories, 32K disk and disks for data storage and sorting work files.

MIS is actually a report generator,

as well as a data-inquiry package, providing a simplified

language for report specification

and extensive capabilities to express logical relationships between various elements of data.

There are six types of control statements, the parameters of which control the execution of the generated program. Desired titles, record descriptions, selection criteria for reports, summary fields, and file-definition statements can be specified.

The main MIS is offered by

the company, located here at

3514 Delaware Ave., in proprietary software development. The firm is currently offering several packages, namely, Cobol compiler, a debugging aid for Cobol programs, Cogen, a Cobol pre-compiler allowing the specification

of program logic as decision tables, DTF IV, a full-scale

data-processing system, and

CMFLS, a library system of specialized Cobol macros permitting the standardization of most data processing functions.

Since inception of the MIS

and CW that liked it, they

pointed out that they were, in

the main, already using RPG for

their reports and, therefore, did

not have that much use for the

Change Marks Start of CW's 3rd Year

NEWTON, Mass. Computerworld celebrated its second anniversary last week by moving into larger quarters for the fourth time. The new office, located at 797 Washington St., more than doubles the office area available to the various departments of the company, which also permits the continuation of special production, advertising, circulation for the first

quarter of 1968. Computerworld began in June, working out of the second

floor at 114 Eliot Street in Cambridge, Mass. The site was conveniently located over an independent parking garage where employees could enjoy a variety of exotic odorous sensations. By September, 1967, CW was housed in a third floor walk-up at 129 Mt. Auburn St. in Cambridge.

In January, 1968, Computerworld moved to brand new headquarters at 60 Austin Street, Newtonville, but the publication's rapid growth required the

new, larger space within

eighteen months.

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On the Inside

Input Devices Shine at DPMA Show

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A Look at Memories of the Future

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User May Be Infringing Patents When He Loads His Programs

NEW YORK—A long-feared possibility—that computer users might be infringing patents when they run their programs has come to light. A small firm with a 1948 patent on disks served notice that it believed some 200 users of on-line inventory control systems on Control Data, SDS, and Honeywell computers were infringing its patent.

The essence of the claim by Technitrol, Inc. is that users of computers who have programmed them to act as on-line inventory control systems are infringing the patent, unless they, or their computer man-

Mature System Software Ready With CDC 6700

(Continued from Page 1)

handles the monitor and executes programs in a disk processor system and includes all the features of the present 6000 series Scope operating system.

Available software includes Cobol, Fortran, and Algol compilers; Export/Import for remote batch processing; Intercom for remote conversational terminals; Sort/Merge, Perf/Time, Simscript, and simulation programming; Apt for numerical control processing; and Optima for linear programming.

The 6700 uses the 6000 series peripheral and input/output equipment, including remote terminal devices and displays that have helped make the 6000 series highly adaptable to real-time, on-line, and time-sharing systems.

Control Data has now delivered over 125 of the 6000 series systems throughout the world. It was originally delivered as the 6600 in 1964. Since then, other program-compatible systems, such as the 6400 and the multiprocessor 6500, have been introduced.

DATA COMMUNICATION IDEAS?

Talk to Tally

How about a low cost computer compatible mag tape terminal? Tally's got the answer—the Model 400 Magnetic Tape Send/Receive Terminal. Using 1/2" tape, this system independently sends or receives data from a computer terminal freeing the computer from time consuming transmission tasks. Select 200, 556, or 900 cpi. Features unmatched reliability and guaranteed compatibility.

Write or call Tally, 1510 Mercer Street, Seattle, Washington 98109. Phone: 206-424-0790.

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facturer, has obtained licenses. A number of computer manufacturers have obtained such licenses, but Control Data, Honeywell, and Scientific Data Systems have refused to admit they need them.

The federal rule under which Technitrol is attempting to convert its patent into a declaratory action instead of a legal action requires that the representation be such as "will fairly insure the adequate representation of all." Unless the interests of the absentees are protected fairly by the representatives, the court can declare a patent invalid. A clear action because it does not meet constitutional standards of due

process, according to legal sources.

Technitrol may have some difficulty in meeting these standards, since it seeks to name as representative of users three computer manufacturers whom it has already sued as infringers of its patent.

The interests of the user are not necessarily the same as those of a manufacturer. This has been shown by several recent cases such as that of Food Fair Inc. against IBM and the Justice Department's suit against IBM which taken the point of view of the consumer.

The Technitrol legal notice appears on page 13B.

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\$1,890/Mo. Tape-to-Film System Can Provide Printing Flexibility

MONTREAL. A new system that takes magnetic tape records directly onto microfilm without intermediate processing has been introduced by Burroughs Corp. during the Data Processing Management Association show. Called BCOM, it provides for growth in printed faces (three character sizes are possible) and in the placing of graphics. Placing can be horizontal or graphical.

Some graphic capability is possible, and copies of display records can be searched for and reproduced from film onto either paper or film.

Lease prices range from \$1,890 to \$3,290 per month.

The corporation says the system can record computer output directly on microfilm up to 40 times faster than a line printer, and that the 100-foot microfilm cartridge can hold data from almost a complete 2,400-foot magnetic tape.

Burroughs President Ray W. Macdonald also emphasized the system's portability and compactness in storing and using microfilm records, in comparison to the bulkiness of computer printouts.

"These advantages are particularly important for uses such as archival storage where information is handled infrequently," Macdonald said.

BCOM (Burroughs computer output to microfilm) is aimed at applications that require greater speed and economy in production of micro-generated records that can be achieved with computer line printers.

Typical applications for BCOM might include lists, tables, and tabular records for airlines, banks, credit card companies, educational institutions, finance companies, governmental agencies, hospitals, insurance companies, manufacturers, oil companies, publishing firms, retail

companies, stock brokerage firms, and utilities.

Purchase prices for BCOM range from \$35,000 to \$125,000, depending upon the degree of capability required by the customer. First deliveries are expected to begin in the third quarter of this year.

Technical Data

Information is transferred from magnetic tape by the BCOM unit and is displayed in printed page format on a CRT. Data is photographed by a high-speed microfilm camera either as lines of information or overlaid on reprints of business forms.

The user has a choice of three character sets, each displaying up to 135 characters per line with 64 lines per page, 67 characters per line with 32 lines per page, or 45 characters per line with 16 lines per page. Either 64-character or 100-character alphanumeric sets may be used.

The user also has a choice of either 16-mm microfilm in 1,000-foot rolls, or a 105-micro-

tape camera. Among other options is a magnetic tape search program, or for reading microfilm, offers four readers for locating and viewing information. Readers include a basic reader, a frame count reader with 21- or 26-bar coding, a reader compatible with random access coding, and a microfiche reader.

When copies of information displayed on a viewer are desired, a Burroughs electrostatic printer will make 8-1/2 x 11 by 11 in. dry copies on paper. Either positive or negative copies are available, and variable printing density can be controlled by the operator.



Data from the tape drive, right, is photographed onto microfilm in the middle unit. Individual frames can be retrieved and displayed by the film viewer and hard copies made.

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IBM Gives Details of New Separate Pricing Policy

ARMONK, N.Y., June 23—The IBM data processing division's new way of doing business continues today, establishes prices for products and services in three areas:

- Systems engineering services, offered to assist customers in the installation and application of IBM data processing systems;

- Data processing education, which provides more than 50 professional-level classroom courses to help IBM equipment users train their managers and technicians.

- Programs products, offered for monthly charges under a license agreement.

The company also announced custom contract services, a new offering. Under a custom contract, IBM will assume responsibility for performance of specified tasks, such as the design and installation of a data processing system.

For example, a custom contract might call for IBM to develop an inventory management system and, upon completion, to install it over a period of time to operate. It could cover systems design, selection of programming, and training of customer employees.

Custom contract services are an extension of IBM's experience in special contract work, in particular with the federal government's federal systems division. For several years the federal systems division has performed contract work for the federal government. Some examples are computer installations at the Manned Space Flight Center in Houston, and the Federal Aviation Administration's Air traffic control system.

Systems Engineering Services

IBM systems engineering services, available for a charge, are designed to assist a customer in the installation and application of IBM's data processing system and to increase the customer's overall data processing proficiency. Services are provided for a range of applications, including systems analysis and design, preparation of application flowcharts and block diagrams, program writing and testing, and installation planning.

Systems engineering services are offered on the basis of a specific scope of effort—or definition of work to be done—agreed upon by IBM and the customer. The level of systems engineering skills required depends upon the complexity of the equipment involved and the

way it is used in an operating environment. There are three levels of service:

- Basic systems, which include machines such as unit record equipment, System/360 Model 20, and the 1130 computing system;

- General systems, which include data collection and data communication systems, optical tape systems, and computers to 256; also System/360 Models 25 through 50 and the 1400- and 7000-series equipment when used for batch processing, limited multiprogramming, or general-teleprocessing;

- Complex systems, which include System/360 Models 65 through 95 and the 1800 data acquisition and control system; also all systems when used in such operating environments as general multiprogramming, multiprocessing, and complex teleprocessing.

Systems engineering services will be scheduled in half-day units.

Charges for systems engineering services provided to any customer prior to Jan. 1, 1970, will be waived to the extent that such services are equivalent to the assistance IBM and the customer had mutually planned before that announcement.

Data Processing Education

More than 50 professional-level classroom courses are offered for a charge in IBM's data processing education program. Also available for a charge are additional services for private individuals in the form of programmed instruction or audio and video tapes or supervised study halls.

The program is designed essentially to help users of IBM equipment train their data processing managers, systems analysts, programmers, and operators.

Courses will be held at the data processing division's 25 education centers.

Customer education courses available before today will be charged without charge until Jan. 1, 1970, to users of IBM data processing equipment.

Professional courses will be offered as lectures, classrooms or as programmed instruction for individual study. Programmed instruction study halls, with advisor assistance, also will be available.

Charges for professional courses vary widely according to course content. Some examples of classroom courses and prices are:

- "System/360 Operating System Advanced Coding," a course for systems programmers on how to use systems facilities to define, code, and test programs written in assembly language (\$460 per student);

- "1800 Time Shared Executive System Specification," intended to teach programmers and systems analysts to write programs in Fortran for execution on the 1800 data acquisition and control system (\$220 per student); and

- "System/360 Continuous System Modeling Program," intended to teach programmers and scientists to simulate a continuous process on a computer and interpret the results (\$170 per student).

The professional courses are intended primarily for users of IBM equipment. IBM does not intend to solicit subscriptions from the general public, but will accept applications from anyone meeting course prerequisites. All applicants must meet standard entrance requirements, such as prior data processing education or equivalent experience. For some courses written examinations will be given.

Courses designed to meet special education needs may be obtained at special price quotations. IBM systems pricing also may provide special instructions at established systems engineering rates.

Classroom courses designed to train operators in the use of keypunch and unit record equipment are being discontinued effective July 1, 1969. This service is provided by many private and public schools, and a large amount of self-study material on keypunch and unit record equipment is available from IBM and other sources.

For courses in basic programming, basic input-output, and console operation, IBM's materials of instruction, including course outlines, are available to anyone at no charge.

Data processing instruction designed to introduce IBM equipment to users and prospective users will be provided without charge, as in the past. This includes:

- System features instruction, containing basic information users need to understand IBM data processing systems;

- Industry and product seminars which demonstrate new IBM products and services; and

- Customer executive seminars which demonstrate computer potential.

Programming

New IBM programming that is an essential part of a data processing system is fundamental to its operation and maintenance. It is called system control programming. It serves as an interface for IBM program products as well as user programs and is directly involved with the management of available system resources. System control programming controls various input/output devices and the execution of programs. System control programming announced in the future will be provided, installed, and serviced in IBM equipment without charge.

Most future IBM computer programs will be offered at monthly charges. Called *program products*, they will be provided to anyone who signs a license agreement. A license for each program product will require a customer to pay it for a charge on a designated central processing unit (CPU). The customer may use the same program on additional CPUs by paying for an additional license for each CPU.

Program products will include application programs, conversion aids, sort programs, and language processors.

Charges for program products will vary widely. Monthly charges have been established for 18 programs previously announced but not yet available. Some charges are:

- Generalized Information System, which will enable users to get information from a computer by asking it questions in a simple, English-like language (\$1,500 a month);

- Text Processor, Paging-Information System, which allows users to edit text and do page layouts using a computer (\$450 a month); and

- Power System Planning, which will allow electric utility engineers to simulate the various conditions affecting power system expansion and change on System/360 (\$300 a month).

IBM's program library currently will be available as in the past. Services for those that have been supported by IBM (Type I and Type II) will remain in

Type II programs) remain unchanged during a transition period ending Dec. 31, 1969. Services for programs include defect analysis and temporary bypasses.

Program products each will be offered with one of the three programming services classifications:

- Class A includes, without charge, defect analysis at the customer's location, reporting results of analysis to a central programming service and making temporary bypasses, when required, by field engineering division personnel.

- Class B includes the central programming service without charge, with the field services provided by field engineering personnel for a charge.

- Class C, for which field engineering assistance is available for a charge.

Each individual program product at its announcement will be assigned a service classification. Currently available IBM programs have been assigned service classifications which become effective Jan. 1, 1970, after the announcement period.

Field engineering assistance also will be offered for charge for non-IBM programming used on IBM data processing equipment. This emergency assistance will be available to eliminate problems and correction when the work can be done in eight hours or less. For work requiring more than eight hours, systems engineering services are available for a charge.

Unbundling Shock: Programs Can Cost More Than a Line Printer

(Continued from Page 1)
many other issues, including the changing demand for past actions," he said. "DPF&G intends to study the move very carefully."

Honeywell, Control Data, and Univac all followed the same path, saying that they wanted to study the announcement before responding.

Other Changes

As well as the software prices, IBM also announced that it was

going to charge for systems engineering, education courses, and custom contract services.

Transition Period

A six-month transition period, ending Dec. 31, 1969, is being allowed during which customers and IBM can adjust to the unbundling changes. IBM said also that all programs currently available from the program library will remain in the public domain and available as in the past.

Separately Priced Programs

The following Type 2 application programs are the first for which IBM has announced prices. The prices are monthly charges per CPU.

1130/1800 System Programs

Charge Materials Allocation Processor \$20

Linear Programming System \$30

Per Month

System/360 Programs

Advanced Life Information System(DOS), ver. II \$100

Array Processor(Memory 44) \$130

Customer Information Control System(DOS) \$300

Generalized Information System(DOS) \$100

Information Management System(DOS) \$300

Medical Information System(DOS) \$350

Power System Planning(DOS) \$300

Project Management System(DOS), ver. III \$300

Program and Listing Processor(DOS) \$200

Real Estate Predictor Program(DOS) \$25

Text Processor/Edit/360(DOS) \$250

Text Processor/Pagination/360(DOS) \$450

Per Month



'Macdonald Says Burroughs Will Extend Separate Pricing to Large DP Systems

Detroit — Burroughs, which has been experimenting with the separate pricing of hardware and software on a limited scale, will extend the policy to its large EDP systems, the company announced last week. Details of the separate pricing of hardware, software and services will be released shortly, the company said.

Burroughs President Ray W. Macdonald said that present and prospective users of large Burroughs systems were being given the option of continuing under present contracts or of converting to a new unbundled pricing plan.

Burroughs "unbundled" its L2000 billing computer in February and later extended the policy to the T500 terminal computer and the E700 terminal system. It is effective July 1, but the policy is being extended to the E4000 and E6000 accounting systems, Burroughs said.

This "is part of a program that may encompass a variety of additional electronic equipment such as general purpose computers, and electronic data-processing systems," Macdonald said.

He added that Burroughs' experience with the "very success-

ful L2000 program has reinforced our conviction that separate pricing for software and services, and for hardware, is feasible and advantageous for both Burroughs and our customers."

"We feel the customer should know how much he is paying for basic equipment, and that he should have complete latitude in selecting the amount of software that fits his requirements," he said.

Under the E4000 and E6000 price separation plan, prices for hardware will be lowered, and customers will be able to choose from four basic methods in identifying costs for application software:

• Customized programming can be written by a Burroughs application software representative according to the customer's specific requirements.

• The customer can select standard application programs supplied by Burroughs.

• The customer can select a standard program and have it modified for his application.

• The customer can do his own programming after receiving training from Burroughs.

The company said several outstanding advantages accrue to the customer through the ability to identify software costs separately from hardware prices:

- He will pay only for the amount of programming required for his particular application problem.

- He will pay only once for a program that can be used in multiple-machine installations.

- Programming costs are separated from capital expenditure cost if the equipment is purchased.

- Programs are written by Burroughs application software experts.

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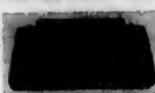
Portable Terminal Handles Tape, Edge-Punch Cards

PALO ALTO, Calif. — A portable terminal that features paper tape and edge-punch card I/O, as well as the control functions and hard-copy output of a keyboard/printer has been demonstrated.

The terminal, designated Model 1000, is a data terminal, is S/360-compatible and can replace IBM terminals or operate in mixed mode with them, the company says.

The manufacturer, Data Division of Teletype Corporation Systems, Inc., says that its low cost makes the 1051 especially desirable for multiple-terminal installations, operating in both terminal-to-terminal and terminal-to-computer communications over either public or private lines.

The unit has a standard fe-



NW PRODUCTS

tum, Non Print/Non Escape, which allows the operator to transmit or receive without printout, should be that desirable or required for maintenance of security.

Optional automatic ribbon shift (to allow color identification of messages received and transmitted), half-line spacing for subscripts and superscripts, the edge-card capability, and other features and options are available.

The company is located at 2600 El Camino Real, Palo Alto, Calif. 94306.

Attendance Recorder

The Attendance recording system features data collection at a central point with output compatible with a number of different computers, on magnetic tape, punched cards, or paper tape.

The employee carries a small (2 1/2-in. by 3 1/2-in.) plastic card, containing only his own identification.

The card is inserted into a special reader and transmitted,

in Touch-Tone signal, to a receiving station.

At that point, the time is clocked and the full information is output in computer-usable form.

Optional automatic ribbon shift (to allow color identification of messages received and transmitted), half-line spacing for subscripts and superscripts, the edge-card capability, and other features and options are available.

The company is located at 2600 El Camino Real, Palo Alto, Calif. 94306.

The unit has a standard fe-



The company offers both 9-track, 800 bits/inch, and 7-track, dual-density, versions, compatible with IBM 729 or 2401 (Model 1) and 2415 drives.

There are also units designated 6X60; these lack read-after-write capability, which is said to be built into the 2404s.

Peripheral Equipment Corp., 9551 Glendale Ave., Chatsworth, Calif. 91311.

Addressing Machine

A new table-top addressing machine applies computer-printed forms to address imprints or labels to 7500 documents or mail pieces per hour.

The machine is designed to be rented for \$50 per month, with a meter charge determined by the number of addresses applied, according to the manufacturer, Cheshire, Inc.

With the Mod 1 distributor, users can enter their data, process it through a data processing system, to store, update and print-out addresses or other data on wide computer forms at high speeds. This eliminates the need for slow plate or stencil systems and their costly maintenance, the company says.

The Model 6X40 is actually more powerful than there are three different forward speeds, 37.5, 25, and 12.5 in./sec.

The manufacturer, Peripheral Equipment Corp., has priced the 37.5-in./sec unit at \$47,500 in single orders, or \$37,500 in quantities of 100 or more. The slower rates are scaled down from there.

It also provides users greater selectivity from their lists, better list control, and fewer "human errors."

The unit automatically prints addresses or other data from the computer-printed forms to documents or mail pieces in sizes

to 12 in. by 11 in., up to 1 1/8-in. thick. The machine will also apply heat-activated label forms as crisp, cleanly cut labels with no ink bleed-through.

After addressing, documents and mail pieces are fed into a storage hopper.

Other models also are available.

The self-standing Mod 1 and Mod 2 units have handle bars to 13 in. by 13 in., up to 1 1/2-in. thick. The Mod 3 distributor also automatically separates and stacks mail by Zip Codes, common destinations, and other groups, on delivery conveyor belt for fast addressing.

Cheshire, Inc., 408 Washington Blvd., Mundelein, Ill. 60060.



Tape Coupler

A punched-tape coupler, said to be developed to put IBM's MT/ST in the telephone-position business, has been announced.

The Model DC-203 is a plug-in, add-on modular unit that translates MT/ST special code and conditions it to penetrate tape at speeds up to 40 inches per second in TTS format.

The additional code necessary to bring MT/ST code up to the full TTS code has been accomplished by using the plus-minus key as a separator.

The unit has been placed in production by the company says, with initial deliveries scheduled in June.

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360's FOR SALE AND WANTED

IHS has for sale the following 360 equipment: 360/30 88K CPU for July, 1969; 360/30 16K CPU for immediate delivery; two 360/30 88K CPU's for Sept., 1969 and Jan., 1970 delivery; 2311's and 2941 for shipment June, 1969. We are looking for a 360/80 CPU or system, 1, 360/90 CPU, a 360/40 CPU, 360/60 CPU, 360/70 CPU, 360/80 CPU, 360/90 CPU, 360/100 CPU, 360/110 CPU, 360/120 CPU, 360/130 CPU, 360/140 CPU, 360/150 CPU, 360/160 CPU, 360/170 CPU, 360/180 CPU, 360/190 CPU, 360/200 CPU, 360/210 CPU, 360/220 CPU, 360/230 CPU, 360/240 CPU, 360/250 CPU, 360/260 CPU, 360/270 CPU, 360/280 CPU, 360/290 CPU, 360/300 CPU, 360/310 CPU, 360/320 CPU, 360/330 CPU, 360/340 CPU, 360/350 CPU, 360/360 CPU, 360/370 CPU, 360/380 CPU, 360/390 CPU, 360/400 CPU, 360/410 CPU, 360/420 CPU, 360/430 CPU, 360/440 CPU, 360/450 CPU, 360/460 CPU, 360/470 CPU, 360/480 CPU, 360/490 CPU, 360/500 CPU, 360/510 CPU, 360/520 CPU, 360/530 CPU, 360/540 CPU, 360/550 CPU, 360/560 CPU, 360/570 CPU, 360/580 CPU, 360/590 CPU, 360/600 CPU, 360/610 CPU, 360/620 CPU, 360/630 CPU, 360/640 CPU, 360/650 CPU, 360/660 CPU, 360/670 CPU, 360/680 CPU, 360/690 CPU, 360/700 CPU, 360/710 CPU, 360/720 CPU, 360/730 CPU, 360/740 CPU, 360/750 CPU, 360/760 CPU, 360/770 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Army Experimenting With CAI Program In Training 20,000 Officer Candidates

FORT BENNING, Ga. — The Army Infantry School has put a battlefield on-line to a computer through CRT terminals for a two-year test of computer-assisted instruction.

More than 20,000 Army personnel will come in direct contact with the computer before the test ends in September, 1970.

The school is using a Honeywell Model 200 computer system, 50 terminals, and its thousands of students to test the system.

The project is the result of a team effort by subject-matter specialists (Army instructors), education specialists at Fort Benning, computer programmers, and Honeywell's electronic data processing division.

The first phase of the project gives officer candidates practical experience in directing mortar fire, similar to that acquired at a combat fire-direction center. Students use a plotting chart to zero in on a target.

The 50 CRT units are in a 200-seat classroom at the infantry school on the sprawling 285-square-mile base near Columbus in southwest Georgia.

The computer gives the student a problem to solve by displaying it on the CRT screen. The student answers the computer by keying his answer. He checks it as it appears visually on the screen before him, correct it, and then dispatches it to the computer by pressing the command key "transmit."

The computer is programmed to react to a wrong answer and to tell the student what he has done wrong. The computer provides remedial instructions and requests the student to repeat the exercise again. After a correct answer, a new problem is displayed on the screen.

William F. Freeman, the civilian manager of the project, says the study for the Continental Army Command will seek to answer these questions:

- What is the best way to use the CRT devices for the practical exercise phase of Army training?
- What are the benefits and problems that arise from computer-assisted instruction?
- What types of practical exercises are best suited for computer-assisted instruction?

For the first classes, the terminals are being used on a one-to-one basis, one student assigned to each. As the experimental program progresses, multiple-student use of the units will be tested — first with two students to each, then with three, and finally with four.

The army is using the control group method to determine the benefit students derive from computer-assisted instruction.

During the experimental phase, 50 students receive practical experience with the CRT units and 50 students receive training in a computer-assisted practical exercise which has been standard at the infantry school.

Each group — selected to represent men with similar academic skills — receives the same course of instruction for the same number of hours. The practical exer-

cise, with or without the computer, is given on the fourth and eighth days of the eight-hour instruction period.

An examination at the end of that period seeks to determine which group has learned the most. The men are tested again at a later date to determine which group has retained the information better.

The computer also provides a printed analysis of student performance at the CRT units. In this way, Army instructors hope to determine which portions of their instruction need additional emphasis.

Two practical exercises in directing mortar fire for officer students have been programmed.

A third program has been developed to train students in the use of an Army parts manual. Other programs will be developed during 1969-70.

Freeman said the project will bring three levels of officers and two types of enlisted men into the computer-assisted instruction program.

The effectiveness of these programs as teaching tools will determine which programs the Army will add to the system. Freeman said the object is to test as wide a variety of computer-assisted practical exercises as possible during the two-year period.



Screen, on-line to a Honeywell Model 200 computer, simulates a battlefield for this officer candidate. He uses plotting chart to zero in on target, then keys response to the computer.

the computer industry's first key-to-disc data input system accepts the output from 60 or more key stations simultaneously

Time-shared input cuts data preparation costs 50%.

Now you can cut your computer input costs in half. This innovation in data preparation techniques gives you two money-saving advantages over conventional keypunch or one-keyboard/one-magnetic-tape-per-operator systems: (1) the LC-720 employs a computer timeshared input so that the system assignable unit provides data output directly on IBM/360-compatible magnetic disc.

By time-sharing the data from 60 or more keyboard operators simultaneously, significant savings in data station costs of up to 50% can be achieved. Data input to the LC-720 is \$400 per data station for a typical 60 station system. For large data preparation installations, the time-shared input is the only economical way to go.

Data entered into the LC-720 is processed by a small digital computer and stored on an IBM,

360-compatible magnetic disc that provides the advantages of bulk storage and high speed random access of data. The problems associated with punched card handling or the mounting, peeling, and unmounting of magnetic tape reels are eliminated. All data is conveniently and economically stored in an IBM 1316 disc pack for direct high speed input to your modern data processing system. Native 360/360-compatibility on magnetic tape is also provided with the system as standard equipment.

The LC-720 KeyDisc System also offers for the first time, data verification requiring one input pass only through the system, in addition to the normal technique of verification requiring two different operators. Recovery of any line edit is by each operator from 1 to 120 characters long and the system stores a large library of 30 or more different formats, control programs, all available simultaneously to any and all operators.

LC-720 KeyDisc System

Bring your own data for a demonstration!

Logic Corporation invites you to see an operating demonstration of the LC-720 KeyDisc System at the Logic Corporation offices. Bring your own original data and Logic will provide a reel of magnetic tape with output of data from the LC-720 after printout at your own computer facility.

**To arrange for a demonstration,
contact Gary Tischler,
Director of Marketing (201) 334-4626**

**LOGIC
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Editorials

The First Round

A considerable amount of the press coverage given the recent Programmatic case was accurate, but it may have left a wrong impression about the important facts of the case. It was suggested that "IBM won the first round."

In fact, after a hearing in which the technical details of program loading and maintenance and the marketing details of program distribution were examined in court for the first time, the judge went out of his way to consider a key point for the computer industry, the legality of the current marketing practices of the computer manufacturers. He concluded that he could not say with assurance that the practices did not violate the antitrust laws, because the economic situation they set is such that no customer is likely to pay independent suppliers for products he can get free from his computer maker.

It would seem that far from IBM having had the position of the computer manufacturers vindicated in these proceedings, it has instead had an independent member of the judiciary say that the matter is not clear-cut.

It appears to CW that this was not a victory for the status quo, and that it means the industry and users must seriously consider preparing for separate software pricing.

A Welcome for the 6700

The concept of Control Data computers has always been interesting, and it has usually been different. Few companies have followed Control Data's lead, but its commercial success can hardly be ignored.

In the announcement of the 6700, there are a number of items — concepts you wish — which are almost unique and are of great technical interest.

However, the important ones are those with the greatest user interest. After all, computers are for users.

Control Data has preserved its software from the smaller systems in the 6000 range and has done this without affecting the cycle time or any of the other hardware programming, so that programs can be held efficiently outside the expensive central memory without affecting the user's programming.

Control Data has, in short, shown that technical capability can often obviate program incompatibilities. The 6700 is to be recommended both for its own merits (it is the biggest system in the world with available software) and for the user safety which it provides. Welcome the 6700.

Challenge to Computers-Part 2

A Look at Memories of the Future

One of the future methods for knocking a few dollars off your data-processing requirements may be the use of memories other than those with which systems were built. Such a memory might be useful for updating an old second-generation (or perhaps, third-generation) system. You might need one because you have a new application that has run out of memory. You might need one simply because although you could go out and buy more core, your enthusiasm wanes when you look at the price.

Computer manufacturers' core prices are bound to be high. Here, then, are some of the ways you might handle it.

1 — Enough Address?

The first step is to look at the cycle time of your computer. Let's suppose that this is 1 microsecond. You open your core manufacturer's catalog and look for the next higher cycle time. This is the memory you are interested in. That is to say, if you have a 1-microsecond machine, and the core manufacturer offers cycle times of 600 nanoseconds, 800 nanoseconds, 1000 nanoseconds, you should choose 800 nanoseconds. It has to be at least as fast as your present machine. It does not matter, or help, if it is a bit faster. But, your extra memory is not entirely free; the reliability — something worth paying for.

The Way to Memory Economy?

- Check the cycle time of your present machine.
- Choose from the manufacturer's catalog the type of memory that has a faster cycle.
- Find out how many physical bits there are in your word, byte, etc.
- Use this to determine how many bits you need and choose the unit that has at least that number.
- Check the addressing structure of your system and find out whether an added memory can fit.
- If it can't, see if you can add another disk or document.
- If you can't do that either, you're out of luck.

2 — Choose Cycle Time

The second step is to look at the cycle time of your computer. Let's suppose that this is 1 microsecond. You open your core manufacturer's catalog and look for the next higher cycle time. This is the memory you are interested in. That is to say, if you have a 1-microsecond machine, and the core manufacturer offers cycle times of 600 nanoseconds, 800 nanoseconds, 1000 nanoseconds, you should choose 800 nanoseconds. It has to be at least as fast as your present machine. It does not matter, or help, if it is a bit faster. But, your extra memory is not entirely free; the reliability — something worth paying for.

3 — Find Bits/Word

The third and last step does involve checking the computer manuals. You must determine just how many actual bits are required for each byte or word. This is not the programmer version. Programmers deal only in data bits, not address bits. In the moment, you are acting as the engineer; deal also with safety bits. These involve parity bits that check whether the data is safely there. The core manufacturer will undoubtedly help if you are feeling nervous about looking at your own manuals.

... And Memory

By multiplying bits/byte (or words) by the number of bytes (or words) you need, you determine how many bits are needed to form the memory you want. Again, using the core manufacturer's list, you select the unit with the next highest number of bits. That is, if you need 3 million bits, and it makes them at 1 million bits per core, and 4 million, you will have to pay for the full 4 million. Of course, if it makes a 3-million-bit system, you're in luck.

Attaching the Memory

Your last problem is deciding where to put the memory. You can, of course, add it to your own and treat it just as you would an ordinary piece of memory. This means that the addressing structure remains the same as the memory for which the machine has been built. Or, you can pretend it is a peripheral, such as a disk or a document. All you need is an address. You don't have to replace the memory you have; you need a specific address. Generally speaking, getting it as an extended memory is better. This reduces the programming problems.

But there are alternatives that generally require you to do some reprogramming. It's up to you whether or not it is worth it.





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Key Entry Shines at DPMA's Montreal Show

By A.B. Williams
CW Staff Writer

MONTREAL — At a DPMA show, you might expect a predominance of tape and disk input devices. A DP manager here has a working installation, so he's pretty well locked into a processor, systems software, and at least a concept of user program design. His show should demonstrate ways of running throughput or lowering unit costs.

And that's just what the DPMA show did last week. It offered a wide variety of input devices. Most were keyboard-to-disk, but there were even a few new keyboard-to-card units.

Tape and disk cleaners or certifiers also drew a good deal of attention. And there was the expected range of terminals, including one interesting a Bell-GE, on-line punch and a standard ASR-33 Teletype.

But keyboard input stood out, whether the output was on cards, tape, disk, or to communications lines.

Another Input System With Own Processor

Among the new systems on display was a key-to-drum-tape or disk system with its own special processor.

The Key/Edit system has 4 to 32 keyboards on-line to the processor. Records of 80 to 200 characters are stored in a buffer, for editing and reediting, prior to being output to a drum. Input from one keyboard is kept discrete from the others by a process of dynamic allocation.

From the intermediate drum, records are sent for computation, on computer-compatible tape or disk.

The edit is a process of formating and checking the record for preset parameters (such as record length range and shift) prior to writing on the drum. The company has designed that

to relieve the computer of functions such as validity checking.

The developer, Consolidated Computer Services, says the edit function saves the power of the computer for computation. Errors are located prior to entry and displayed on an alphanumeric display.

The company, located at 48 Yonge St., Toronto, Canada, quoted the price of an 8-terminal system at \$1,900 per month, including 9-channel tape output. Each additional key station is said to cost \$100 per month.

Deliveries of production units are scheduled to begin in eight to ten weeks. The company also has a sales office in High Point, N.C.

LC-720 Given Live Demonstration

The Logic Corp. LC-720 system [CW, Aug. 28] was working at the show. It offers either tape or disk output, tape-to-printer capability, one-pass verification, and the ability either to pool from several input units to one output or to write several outputs from a single keyboard.

The system includes a Varian 6021 computer. A 10-terminal system costs \$10,000 per terminal, but a 30-terminal system scales the per-terminal cost down to the \$3,000 to \$5,300 range.

Key-to-Cassette Unit Has CRT Display

A keyboard-to-cassette device that includes a CRT for easy verification was demonstrated by Sycon.

The basic device, the Model 301, is a one-for-one unit, with one keyboard outputting to one cassette. Standard features include full display of records of variable length up to 200 characters.

It can be programmed, that



Marlene Jeffery reviews on-line input with operators at the Key-Edit installation.



Ron Lawson demonstrates how the tape cartridge fits into the MAI-100 data transcriber.



Cynthia Ewing sets the Sycon Key-Cassette video data terminal in operation.

particular cassette, to accept instruction directing program choice and record length from the keyboard. The 301 leases for \$150, with a purchase price of \$1,000.

The second device, the Model 302, adds another cassette, on which selected records or parts of records can be copied. The 302 sells for \$7,900 or can be leased for \$170.

The consumer, the 352, adds the capability of transcribing cassettes to IBM 360-compatible

1/2-in. tape. This device has a listed purchase price of \$5,100 and a lease price of \$130 per month.

Sycon, Inc., of 117 N. First St., Ann Arbor, Mich., says that the units are in full production.

Data Transcriber Uses Computer Tape

A rather simple device, in concept, is the MAI Model 100 data transcriber.

This is a one-for-one unit, on which one keyboard gets one tape cartridge output. The 100 leases for \$1,500 (not the manufacturer) appears to be going for the smaller-volume shop, which has no requirement for large quantities of pooled data.

The Model 100 has a true character (as opposed to octal or binary) display that shows 99 characters, plus a character records with column information. The keyboard is said to be similar to the standard D99 and to eliminate unnecessary retraining.

Standard times include an incremental time for computer soft recording, and a take-up spool. Optionally, the user can have features like double length (199 character) records, counter, and check digit.

The basic Tachannel unit, Model 100-01, leases for \$145 per month, which puts it right in the ballpark with competition like the Honeywell Keytape unit.

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Key-to-Card Shines Again In DPMA Show 'Revival'

MONTREAL — After a couple of years of proliferating key-to-tape and key-to-disk systems, key-to-card seemed almost forgotten. It came back into its own at the DPMA show.

The Punchmaster unit, from CalComp, was the first-on exhibit at the show entrance.

The company claims that one user has realized better than 60% improvement in production after 90 days of use in a two-to-one error-reduction rate.

The unit, in effect, becomes part of the user's keypunch equipment, which can also be used in standard fashion if the user desires.

Punchmaster is basically a 22-program memory and a buffer that stores up to 31 key-strokes. The company says the buffer can be refilled at typing speed and will accept new information while the automatic mechanical functions, such as card feed, are occurring.

The 22-program feature is said to enable one operator to key all of the cards that may arise from one source document. Another than keying several operators doing one card each, all the way down the line. This approach should be a great aid to batch balance, the company says.

Memory and buffer lease for

\$95 per month.

As an option, there is an operator-instruction panel, a training-oriented device that displays information such as shift, program number, control number, and procedure instructions. This costs \$15 per month.

Left zero fill, with or without a two-field accumulator, is also available. Without accumulator, the lease price is \$10 per month; with it, the option leases for \$35.

Lead time is quoted at six to nine months. Prices include training and CalComp maintenance. Keypunch equipment is separately sold.

A keypunch device demonstrated at the show was the Datafider 400. It also features program memory and the usual left zero fill and error options. One item of note is the user can have read-back data featuring programmable illumination of 2,352 separate positions.

The basic Datafider 400 has 15 program levels that can optionally be increased to 31.

The Datafider 400, from Productivity Co., 635 Battery St., San Francisco, has priced the unit in the \$65-140 range, depending on options. Delivery is said to be about 90 days after receipt of order.



Blazing lights highlight the various exhibits on the floor of the Place Bonaventure in Montreal. (CW Photos by Farmer)

DPMA Show Was Smaller, But Offered Wide Aisles, Carpets, and Tranquillity

MONTREAL — The DPMA show didn't look as big as the Spring Joint Computer Conference holocaust. It wasn't, by some 25%.

And there were fewer big exhibitors.

Some of the comparison was most obvious from the gallery — half the available floor space wasn't used.

In addition, the aisles were wider and well-carpeted. The latter attribute was very welcome to people who spent a good deal of time walking around.

Montreal exhibition people appeared to be well-organized and even had trustworthy records of

what had arrived and its current location. When something was on the loading dock, they knew that it was there and not somewhere else.

Perhaps best of all, there were no food stands to contaminate the place with dead pizza and the usual smell of cooking.

Whether it was the wide aisles, fewer attendees, or no showwhacking computers with sledgehammers, the noise level was low, and movement through the hall was smooth.

Occasional crowds did gather around one young lady, who was ballyhooing Univac. It may have been the products (which were also at SJCC) or the miniskirt

that attracted her audience. Some booths were nearly deserted. They seemed, in general, to be smaller than their American presentation. One exhibitor made the mistake of emphasizing the English-speaking nature of the product.

Despite an occasional noisy or misinformed display, the main thing that made the DPMA show different from Spring Joint was the lack of carnage. No big, hairy balloons, no free donuts, very little planned loudness, even in the elevators. Pretty good, given the "bring the wife and kids" nature of the show.

After Some Problems, a Pleasant Visit

MONTREAL — Late Sunday night, just before the Canadian Management Association show opened, there were quite a few disgruntled people in Montreal — people who had been delayed and discomfited by overbooked airline reservation systems.

That was the last real trouble most visitors had. Montreal is well-set up to handle large numbers

of people, and has 12 hotels.

The city goes all out to make the visitor comfortable. Hotel service is excellent. Underground shopping galleries make things easy for the tourist who has forgotten almost anything except his passport book (but larger than a matchbook).

Most of the restaurants are excellent and don't strain the expense account too badly. The local haiku tradition is bizarre, but one is well rewarded, since the "crepes" (translated "pancakes") don't come straight out of the box.

The least expected pleasure was the ride on the Metro. What a subway,啊! The little train underground flies fast, and humidity. The trains are fast, clean, and comfortable.



"No space left," was the only answer Northeast Airlines was able to give over thirty-five people with confirmed reservations on this flight to Montreal from Boston.



Dennis Sullivan and Letta Gibson discuss the new CalComp Punchmaster that speeds conversion of source data to punched cards.



Sue Dallison checks out the Tab Datafider 400 keypunch and memory unit.

Continuing Action Was the Key Result Of Computer Social Implications Talk

MONTREAL — Plans for continuing action were the key result of a DPMA seminar on the social implications of computers.

Nearly 80 people attended the seminar, and only after a brief coffee break, they had been told that only people prepared to take action were invited to return after coffee, and a number of them came and suggested specific types of action.

Danger to Society

Behind the actions, there was an acceptance of the idea that computers involve a danger to society. The argument that computers are a tool were discussed and dismissed as comparatively irrelevant.

Actions suggested included the provision of computer time and assistance to "good work"

causes. This came from a Portland, Me., firm that has been supporting high schools in this manner for some time. Another specific suggestion was to involve educating the computer profession to the need for action and the dangers of computers. This was to be accomplished through various organizations such as ACM and IEEE.

A second suggestion was to remind the profession that humanity, as well as efficiency, is in need of programming. A speaker from the floor strongly emphasized this point. He said it was the responsibility of the professional to emphasize the humanity necessary in applications, because this ordinarily would not be done by management.

The use of specific groups to handle the problems in particu-

lar applications was stressed. It was suggested that rather than holding general seminars, such as the one in progress, smaller groups were needed who would deal with a specific point, like the problem of data banks, and keep themselves informed of relevant events while trying to inform others of the results. Other groups could deal with credit, etc.

Other suggestions included one that specific legislation was needed to ban computer exchange of information without the approval of people affected. Panelist John R. McLean, president of USM, volunteered \$1000 for five years to help support some of the actions and said he was urging DPMA at the international level to help keep things moving.

At the end of the meeting, a mailing list was established so that people could keep abreast of other activities. The session chairman, Alan Taylor, editor of CW, said that in his opinion, he would keep this mailing list on a personal basis, not connected with his newspaper activities. Anyone can be placed on the mailing list by writing to him at 633 Central St., Framingham, Mass. 01701.



Magnetic tape cleaner-evaluator is demonstrated by IBM representative at the DPMA show in Montreal.

College Joins Time-Sharing Network

LANCASTER, Pa. — The Mid-Atlantic Regional Education Research Center, Merc, has announced that Lebanon Valley College, Annville, Pa., has joined the regional time-sharing computer network system.

Lebanon Valley became the ninth Central Pennsylvania educational research institution to be a member of this system.

Paul D. Newland, Merc presi-

dent, said the center will provide sophisticated time-share computer capacity for educational instruction, technology, and research.

Hub of the center, located at Franklin and Marshall College, is the RC Spec 70/46 computer. It is expected that the system will be installed early this fall and will be operative before the end of the year.

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New Magnetic Tape Cleaner Is Shown

MONTREAL — A magnetic tape cleaner-evaluator that will cost \$34,700 (no leasing) was displayed by IBM at the DPMA show.

The Model 3010 is available for three-month delivery in the U.S. only, according to IBM representative.

The 3010 looks like an ordinary tape drive. No literature was available, but the specifications

are like this: 200 in./sec in both directions; the first operation is cleaning; the second is a flux change on the top of the oxide, to create an electrically neutral situation; the final operation is evaluation. All three operations are spotted because they have an identifiable flux.

All of these operations occur in one pass. Errors can be located by pinpoint holes on a card

punched during the evaluation process. This need not be a part of every run.

The IBM people demonstrating it were very careful to state that it was designed specifically for IBM tape transports and heads, and that a potential non-IBM user should do a very careful job of matching specifications.

Company Services Bad 1316, 2316 Disks

CLEVELAND — The servicing of defective 1316- and 2316-compatible disks is the business of a new company, Faraday Associates, as evidenced by a disk pack listing operation.

This type of service could take the disk manufacturer completely out of the service and replacement cycle.

The organization is called Mag-

ication Resources, Inc. At its Cleveland center, the firm said it will test and clean or replace bad disks in a pack, replace top and bottom platters if necessary, and return reconditioned packs to the customer.

The cost of cleaning, balancing, testing, and reassembling a standard six-pack is quoted at \$40. Disk replacement costs \$40 for the first platter, with a top of \$120 for three or more. Service

ca 20-surface disk packs costs \$70, with replacement at \$100, minimum \$225, according to M. H. Emmerich, company president.

He also said that the operation is aimed at a seven-day turnaround time and that the service is already in operation. The company is located at 21330 Center Ridge Road, Cleveland, Ohio 44116.

Peripheral's Peripheral Bows at DPMA

MONTREAL — A peripheral's peripheral was the featured item in a demonstration of digital plotting devices at the DPMA show here.

The apparent redundancy is explained thus: a plotter is used periodically to an off-line tape unit.

The developer, Houston Instrument, 4950 Terminal Ave., Belair, Texas, says that a line length of up to 30 steps can be specified by one character. Further, a "repeat" function can be used to increase the plot rate factor.

Thus, the company says that an effective 900-step plot can be the result of a four-character program unit.

The system is built around a Mohawk 700 (or 900) Data

special software said to avoid the usual requirement of a separate character to represent each of a series of repeated plotting steps.

The developer, Houston Instrument, 4950 Terminal Ave., Belair, Texas, says that a line length of up to 30 steps can be specified by one character. Further, a "repeat" function can be used to increase the plot rate factor.

Thus, the company says that an effective 900-step plot can be the result of a four-character program unit.

The system is built around a Mohawk 700 (or 900) Data

Recorder. Thus, a keyboard can be used for direct data entry. MTR-9 can be purchased for \$22,000 in the nine-track version or can be built from an already owned MDS unit, to save the cost of that device.

The developer, a division of Bausch & Lomb, has three plotters, any one of which can be used in the system. They differ in step size, increment rate, and paper width. The special software and maintenance appear to be available with any of the three.

The developer will quote lease/goods. Delivery of all hardware is stated to be 30 days.

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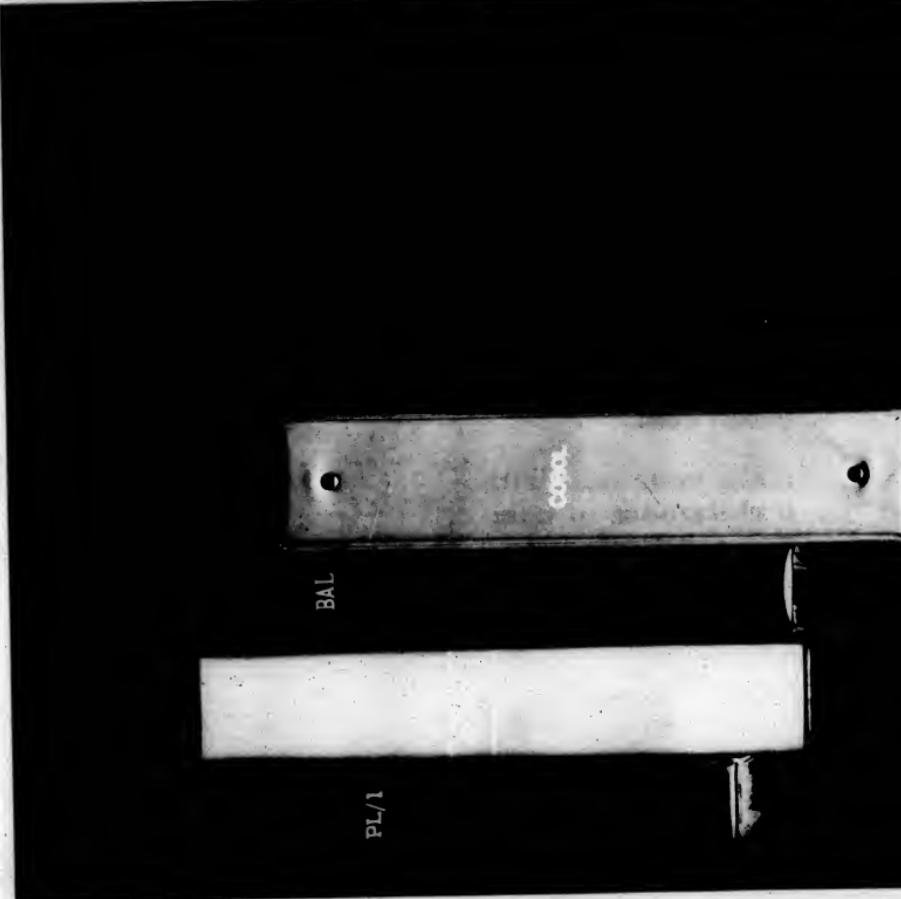
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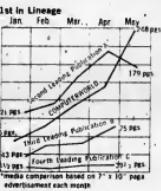
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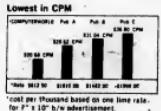
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C. THOSE WHO ACTIVELY INDUCE OTHERS TO SUPPLY OR USE

- (1) MAGNETIC DISK OR DRUM STORAGE SYSTEMS, OR**
- (2) ON-LINE INVENTORY CONTROL SYSTEMS.**

RE: UNITED STATES PATENT NO. 2,611,813
FILED MAY 26, 1948 AND ISSUED SEPTEMBER 23, 1952 TO
TECHNITROL, INC., PHILADELPHIA, PENNSYLVANIA, FOR A
MAGNETIC DATA STORAGE SYSTEM

NOTICE OF PATENT INFRINGEMENT RELATING TO THE ELECTRONIC DATA PROCESSING FIELD AND NOTICE OF MOTION TO ESTABLISH A PATENT INFRINGEMENT CLASS ACTION

I TO ALL WHO HAVE BEEN OR ARE BE CLAIMED TO BE INFRINGERS OF UNITED STATES PATENT NO. 2,611,813.

Notice is hereby given that in the following actions in the United States District Court for the District of Maryland, Baltimore, Maryland, Plaintiff, The Motion For Leave To File Counterclaimed Amended Answer and Cross-Claim Against Defendants, et al., has filed a consolidated class action, under Rule 23 of the Federal Rules of Civil Procedure, against Defendants and certain other persons named in U.S. Patent No. 2,611,813, it would be Class Defendants, and would be bound by any final judgment in such action.

(1) Technitrol, Inc. v. Control Data Corporation, Civil Action No. 17853.

(2) Technitrol, Inc. v. Honeywell, Inc., Civil Action No. 18337.

(3) Technitrol, Inc. v. Scientific Data Systems, Inc.

The proposed Class Defendants are all those persons, firms, corporations, partnerships, associations, and organizations who, directly or indirectly, have been engaged in the infringement of, or claim the right to, or have induced, encouraged, or caused another to infringe, or who would otherwise be an infringer at the aforesaid time, the cause of action to be asserted in the aforesaid patent, U.S. Patent No. 2,611,813.

It is further proposed that the Class Defendants may obtain from the undersigned copies of the Motion For Leave To File Counterclaimed Amended Answer and the corresponding exhibits thereto.

In an Order dated May 23, 1969, the Honorable J. Edward Ladd, Jr., United States District Court for the District of Maryland, Baltimore, Maryland, 21202, extended the time within which Defendants could file their answers to the Motion For Leave To File Counterclaimed Amended Answer and Cross-Claim Against Defendants, et al., until July 23, 1969. The Court will receive the time to reply to and including July 23, 1969.

II. NOTICE OF INFRINGEMENT

Notice of infringement is hereby given to each and all of the following:

(a) Whomsoever without authority makes, uses, leases or sells (or has made, used, leased, or sold) any invention for the purpose of infringing the claims set forth in U.S. Patent No. 2,611,813, issued to the Plaintiff, and including September 23, 1952, to the Plaintiff, and including September 23, 1952.

(b) Whomsoever induces (or has actively induced) infringement of said patent (and thereby is liable to an infringement suit).

(c) Whomsoever sells or leases (or has leased or sold) a copy or copies of the claims set forth in U.S. Patent No. 2,611,813, and/or any material part of such claimed invention, knowing the same to be especially made or adapted for the purpose of infringing the claims set forth in U.S. Patent No. 2,611,813, and including September 23, 1952, and/or sells a single article or commodity of commerce suitable for use in connection with the claims set forth in U.S. Patent No. 2,611,813, and including September 23, 1952, and/or sells a contradictory infringer.

(d) Whomsoever leases or sells (or has leased or sold) a copy or copies of the claims set forth in U.S. Patent No. 2,611,813, and/or any material part thereof, directly or indirectly, for the purpose of infringing the claims set forth in U.S. Patent No. 2,611,813, and including September 23, 1952.

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Software Protection on Agenda of IIA

WASHINGTON, D.C. - Copyright and Right Protection for Information Age Products will be the topic of a meeting of the Information Industry Association to be held at Airlie House, Warrenton, Va., July 18 and 19.

A presentation to open the subject of protection of com-

puter software will be made on July 18 by IBM.

There will submit their proposed registration system for computer programs. The system is similar to copyright and includes the disclosure of concepts of the program, but not the detailed instruction.

There will also be sessions in which copyright authorities will present discussions on copyrights and other topics.

The Information Industry Association, a recently formed trade group of commercial firms that market information products, has called the two-day meeting to analyze the application of copyright and other laws originally written for the earlier age of ink print technologies.

Those interested in participation in the membership organization, conditioned on the adoption of the amendments by the association membership at the meeting.

For further information contact Paul G. Zdziarski, Executive Director, Information Industry Association, 1025 15th St., N.W., Washington, D.C. 20005.

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School to Offer Systems Training

CLEVELAND — The Cleveland Engineering Institute will expand into the computer-systems training field beginning this fall.

The new computer systems training division will be jointly operated by Cleveland Engineering Institute and Progressive Data Management Corp.

Inventors of very small computer with application, CRT and balanced management team desire seed money from investors until public issue can be secured.

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July 2, 1969

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New Management System Is Proposed for Lawyers

PHOENIX — A law-office system, providing both money management and business management for lawyers has been announced by Phoenix Information Network Corp., and the local law firm of Moore, Romley, Kaplan, Robbins and Green.

Currently under development, the system is intended to provide the information necessary to allow partners in a firm to keep track of time spent on each case, fees received, charges to be made, and actions to be taken in specific cases.

The time spent by each attorney, how it was spent, how much time was spent on overhead, and case-by-case breakdowns by attorney and firm will permit better management for groups of lawyers, the two firms said.

Project Control Program Offered As Part of DP Engineering Service

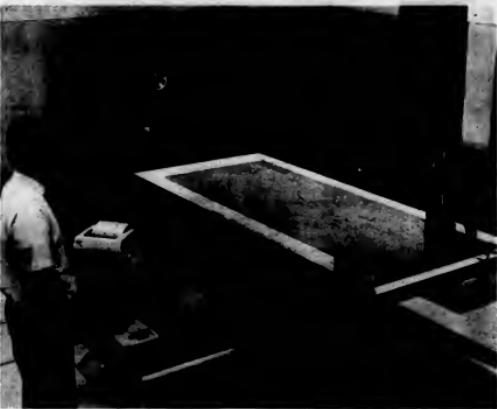
PORTLAND, Ore. — Project, a computer program for project control, is now available on EDIF Central, Inc. The program is the fourth to be offered by the Portland-based computer time-sharing firm as part of the integrated Civil Engineering Systemline.

The remaining four programs remain to be installed in the company's IBM 360/50 computer, according to project coordinator Kenneth G. Rozas, a civil engineer. "Once the system is finished, it will be a critical path method for logical control of engineering tasks, including the scheduling of manpower, equipment, and materials. "Every job that can be represented by a network of work items and associated requirements can be processed by Project," he said.

Rozas explained that time-sharing enables the project engineer to access a computer from his own field office over telephone lines. "Because the com-

puter will produce accounts receivable, revenues, detailed expenses, and profit for the period displayed, they said. Attorneys worldwide, distinguishable by type of business, and growth-projection data will also be supplied on demand. Future planned extensions for the system include production of P/L statements, balance sheets, and equity-position reports for members of the firm.

Incorporated into the system, through its existence on INC's time-sharing service, is a text editor expected to make significant time savings for both legal documents. The system provides password protection, which the company feels will prevent unauthorized access to each attorney's files. No date for completion has yet been predicted.



The answer to every engineer's dream! An automatic drafting machine that produces drawings having an error no greater than 0.005 inches in twenty feet. It is used to test NC tapes and make drawings with NCCS' new Action service.

Drawings Digitized, NC Tapes Produced

CLEVELAND — Action, a new service offered by Numerical Control & Computer Services, provides the ability to produce any type of numerical control tape which is required in many parts, as well as to transfer production information directly from engineering drawings. The system also produces precision drawings on the company's new Decamatic-ESP drafting ma-

chine. NCCS is a division of the Eugene Dietzen Co.

The operation permits the production of repetitive drawings, such as those used for specific parts which are used in many assemblies, and is capable of producing all types of perspective projections, three-dimensional drawings, and rotated views of any object.

The system also provides all output needed to produce precision drawings stored on the tape and comparing them, by machine, with the original drawing. Operating at up to 400 in./min, the Decamatic can be programmed

Raps Information Can Be Compiled

BETHESDA, Md. — An information retrieval system with built-in report-writing and data-processing capabilities has been developed by Leasco Systems and Research Corp. Known as Raps, the system is intended for business, statistical, and scientific use, Leasco reported.

Minimum requirements for the system are an S-360/20 with 32K, but it will run on any member of the S-360 line. The user is allowed to create functions tailored to needs and incorporate them through the use of an equivalent to the IBM macro.

Retrieval System 2 Different Ways

The two independent ways make up the Raps system. One transforms high-level, report-specification and processing-requirement statements into programs, sorting instructions, and report writing. The other uses the specific language into Fortran-like language, allowing the scientist user to adapt the program for coping with special circumstances and for making his own logical programming part of the package.

The system price is \$12,000, including documentation, source code, and maintenance. It can be leased for \$500 per month with a \$3,000 installation charge.

to produce any type of grid desired as an overlay, as well as specialized types of drawings, such as performance diagrams, isometrics for perspective, topographic reports, and topographical maps.

Drawings are input through the use of digitizers, shown in the photograph. The "programmer" traces the drawing with a light pen and the machine produces their numerical equivalent under program control.

Any type of drawing can be processed, and any of the services offered can be performed from this step, according to NCCS.

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PROGRAMMER/ANALYST

MIAMI - A computer-linked system that will provide instant credit card transaction approval at any cash register in any store in the U.S. has been announced by Computer Controls Corp. here. According to J. Robert

Park, senior vice-president of the company, the key to the operation is the direct tie-in of each register by phone to the company's centralized, time-sharing complex. The new system, he reports, is

The new system, he reports, is

called Post (point-of-sale throughput) and is used at the point of sale to read credit cards, update an accounts receivable file, check credit, and check for lost or stolen cards or returned merchandise, according to Park. The "black box," as Park has dubbed the system, was developed to the company's specifications by an electronics manufacturing firm and has been successfully used for the first time in a demonstration of time-sharing credit control using a credit card, according to Park.

"...a major benefit of Post for companies using the system will be a dramatic improvement in customer relations," Park said. Studies, he noted, indicate that after a customer has selected his merchandise for purchase and presented his credit card to the clerk, an overall average time lapse of 7.8 minutes occurs before the customer can go on his way. That causes a major bottleneck in the flow of customers around the counter, he said. Post eliminates this problem by doing away with the necessity of waiting an extended length of time for the completion of a transaction.

"The unique feature of Post is that the system can be used anywhere in the country. As a charge transaction occurs at any cash register in any store, the regular store credit card, specially encoded, is fed into the black box. Information is transmitted to the central computer complex in Miami, and credit approval or rejection of the purchase is received by the black box located at or near each register within 10 to 15 seconds, thereby providing an extremely large marketing base," he said.

Computer Controls Corp. intends to apply for a patent for the Post software.

Post will also provide its users with substantial cost reduction and absolute control over their accounts receivable and billing operations according to Park.

The MIND EXPANDER...first in the Payment Systems Field. A new monthly service publication designed to fit your pocket as well as expand your mind with all the news you need to plan for the payment systems revolution.

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order-control, memo-filled cards easily routable to others in your organization
when needed and to update. Per starters, coverage will include:

local trailer application **new equipment** **retailing implications** **market tests/ new market each month** **interlocking finance** **risk management ideas** **credit/identification cards** **the banking system** **new items in payment systems** **consumer news** **significant installations and sales** **software development** **customer satisfaction and retention** **legal aspects and recent rulings** **pit test developments** **long distance telephone news** **fleet control** **fleet trailer industry** **conglomerates** **new products** **international expansion** **new products** **who is buying what?** **new laws** **international programs** **calculator of costs** **audit and control** **transportation history** **strategic implications** **staffing and**

And this will be known to you,
when the new by Billing and
Gough has been published.



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RELOCATABLE OBJECT CODE TO ASSEMBLY LANGUAGE TRANSLATOR "MSA" converts 1130/1800 relocatable object decks to assembly language source. Lists and punches deck with all control cards ready for modification and re-assembly. Save many words in FORTRAN programs and subroutines. Change conversion tables quickly. Effect system changes easily - provides source for IBM system phases. Excellent teaching aid - shows assembly code generated by the FORTRAN compiler, many options.

July 2, 1969

Page 17

**ITI Quote System**

A stock quotation system using closed-circuit TV has been supplied to the London Stock Exchange by a British subsidiary of International Telephone and Telegraph Corp. Stock price changes are keyed into a central computer at the exchange and are almost instantaneously transmitted by closed-circuit TV to the offices of 250 brokers. The system, using some 800 television receivers and control units, was supplied by ITI's Standard Telephones and Cables Ltd. for about \$400,000.

Computer Short Interest Up

By E.C. Staff Writer

NEW YORK — Short interest on stocks listed on the New York Stock Exchange dropped sharply during the month ended June 13, as selected computer companies' short interest increased for the same period.

Short interest on the NYSE increased by 3,244 to 1,244,792 from 1,241,548 the previous month.

Short interest on the American climbed 3,345 to 599,547 from 596,202 in the previous month.

A short sale is the sale of borrowed stock.

The seller generally anticipates a price drop that will enable him to repurchase an equal number of shares at a lower price.

The short interest is the number of shares not repurchased for return to lenders and represents a measure of the backlog of potential buy orders.

The following tables show the New York and American Exchange stocks in which a short position of at least 20,000 shares existed on June 13 or in which there was a short position existing at least 10,000 shares since May 15, 1969.

NEW YORK STOCK EXCHANGE

Amer Photocopy	88,150	91,750
Amer Research	24,007	23,522
Bunker Ramo	23,658	33,544
Burr-Brown Corp	8,3407	8,641
Computer Sciences	10,000	10,000
Control Data	155,820	157,882
Control Data Corp	155,820	157,882
Comsat Electric	55,625	56,444
IBM	55,625	56,444

Major Computer Companies Seen Safe From Economic Slowdown

NEW YORK — The major computer companies have little to fear from current industry uncertainty or a possible economic slowdown, says Robert A. Webs, Jackson & Curtis, nationwide investment firm.

"We remain optimistic about the long-term prospects" of well-established diversified computer companies, writes Sullivan in a research report released during June. He recommends the group for investors seeking long-term capital appreciation.

Computer revenues, which have been rising steadily since 1966, are expected to increase at an annual rate of 15% to 20% over the next five years, Sullivan says.

Despite the impressive earnings strides made recently, he adds, however, computer stocks have done very little.

As a result, according to Sul-

livan, many issues seem reasonably priced in relation to their growth prospects. He is especially enthusiastic about IBM, 3M, National Cash Register, Paine, and Sperry Rand, S2.

Sullivan's optimistic outlook for computers includes the following points:

- Although computer shipments are down slightly, most companies expect that total revenues continue even if the number of new installations levels off or declines.

While there were less than 15,000 systems shipped during 1968, down from 16,676, there are now more than 70,000 systems in use at the end of 1968 versus about 58,000 at the beginning of 1968 — a 20% increase.

- Eventual settling of current antitrust suits against industry giant IBM might create an opportunity for smaller computer producers to increase their market share, but at the same time, it is doubtful that IBM would have to agree to any compromise that would severely limit its own growth potential.

• Computer prices have held up relatively well, even if anti-inflationary moves lead to a slowdown of the economy. This is due to the stability of rental revenues and because the product is becoming an essential cost-saving tool for broadening the scope of users, not all of whom are influenced by business cycles.

- IBM's anticipated

"unbundling" — price restructuring to separate charges for hardware from those for software or programming applications — should have no major impact on either IBM or other computer makers.

Sullivan added that he expects IBM to begin charging separately for hardware, application software, customer support, education, and maintenance.

"While total unbundling may not be covered in the initial announcements, we believe eventually it will come," he said.

Sullivan predicted that while software, peripheral, and service costs will continue to rise as a great opportunity to increase their market share, it will not have a major impact on IBM.

"But it will provide much greater flexibility to adjust prices as needed."

"For example, maintenance costs have been rising rapidly in recent years, but IBM was not able to increase its charges due to fixed contracts. In the future, it may be able to do so."

Another factor, Sullivan stated, is that the great majority of computer users would prefer to rely on a single reliable source for its total data-processing needs. Hence, IBM is likely to retain the lion's share, even with unbundling, and with its growth, financial strength, and experience, it is likely to be able to offer the fullest line, and lowest prices and costs of any segment of the business.

Europeans Plan to Build Super Computer

WASHINGTON, D.C. — The American Embassy in Paris has forwarded information on a plan

for the development of a European super computer to the U.S. Department of Commerce, Business and Defense Services Administration.

Saint Padov, director of the Scientific, Photographic and Broadcast Equipment Division said:

"According to the French newspaper *Les Echos* and other French sources, five European-based firms and one British firm have been holding discussions on the construction of a European super computer.

The common stock of ITEL Corp. has been approved for listing on the American Stock Exchange upon completion of the merger.

Commenting on the expected benefits of the merger, Redfield said that SSI's geographic diversification would provide a base for expansion of SFI's computerized accounts receivable and payroll services to major cities in the U.S.

At present, SFI serves 700 businesses in the greater metropolitan New York and Philadelphia areas. SSI Computer, the largest lessor of IBM Systems products, has regional sales offices in Atlanta, Chicago, Dallas, Los Angeles, New York, Pittsburgh, and Toronto.

Redfield said that ITEL Corp. will embark upon a diversifica-

tion program upon completion of the merger. He said it is presently anticipated that ITEL will seek additional business engaged in computer-related activities that will complement ITEL's present interests.

The common stock of ITEL Corp. has been approved for listing on the American Stock Exchange upon completion of the merger.

PSC to Distribute Stock

NEW YORK — Programming Sciences Inc. is planning a special distribution of stock in its privately held affiliate, Consolidated Software, Inc., a PSC wholly-owned subsidiary.

The distribution to PSC shareholders of record on July 15 will be on the basis of one share of Consolidated Software for each 10 shares of PSC, according to Albert M. Loring, PSC president. The plan has the approval of the PSC board of directors, he said.

Loring said that the distribution will allow PSC's shareholders to benefit "from the constantly expanding software packaging markets, in which we believe Consolidated Software has a significant role."

The stock distribution will be made as soon as possible after the record date.

Consolidated Software was organized earlier this year to operate independently in marketing software packages, including those developed by PSC.

(CH), and the British firm International Computers Limited (ICL).

"The outcome of these discussions will be presented to the Council of Ministers of the Six, European Economic Community,"

"The players hope to capture 10% of the European market demand for giant computers during the 1975-1980 period at which time the European super computer is scheduled to come off the drawing board."

"The plan is based on the realization that only a continental-sized market could absorb the heavy research and development costs entailed in producing a super computer."

"Otherwise, as pointed out by *Les Echos*, this market would fall into the hands of firms which 'presently have a world monopoly in the domain of giant computers.'

"As well as recapturing a market essential to development of defense, the plan is described as opening up new opportunities on the European scene."

"The plan is viewed as a 'pioneer project' designed to draw advanced technology and to deeply affect research and industry, even leading to the restructuring of European industry."

PLANO SYSTEMS AND DEVELOPMENT CORP., 1740 Cherry St., Philadelphia, Pa. 19103, a company offering a broad range of land planning, zoning, engineering services, filed to register 250,000 shares of common stock. Proceeds at \$5 per share, intended for the initial development of programs, equipment, marketing, working capital, and other purposes. No underwriter is involved.

COMPUTER PROFILES, INC., 246 W. 8th St., New York, N.Y. 10011, a company engaged in the business of designing, developing, and installing EDP systems for the advertising industry, filed to register 250,000 shares of common stock.

Proceeds at \$10 per share, intended for the initial development and programming of the Comprofite, design, development, and installation and public relations, for installation, maintenance, and maintenance of the Comprofite, and profit, for the establishment of offices in Atlanta, Chicago, Los Angeles, and New York, and for research and development. No underwriter is involved.

FISCAL MANAGEMENT SYSTEMS, INC., 100 W. 42nd Street, New York, N.Y. 10036, a company engaged in the offering fiscal and specialized management systems and services relating to data processing, systems design, and consulting, and in anticipating the establishment of a time sharing computer center, filed to register 200,000 shares of common stock. Proceeds at \$2.20 per share, intended for the establishment of a computer service center in New York and for general corporate purposes. The underwriter is A.J. Carter & Co., Inc., 42 Broadway, New York, N.Y.

DATRON SYSTEMS, INC., Mountain View, Calif., a company engaged in the design, manufacture, and sale of certain types of computer peripheral equipment, including principally of automatic time clock punches, automatic key punches, key punches, tabulating card punches, card readers, and transmission equipment, and in the provision of equipment, filed to register 250,000 shares of common stock.

Proceeds at \$10 per share, intended for the construction of additional manufacturing facilities and the acquisition of production equipment and tooling, and for the establishment of up to eight regional sales offices, for advertising, product design, and for general corporate purposes to the payment of equip-

ment obligations and short-term loans. The underwriters are Kleiner, Perkins & Cohn, Inc., 1728 Mission Street, Beverly Hills, Calif., and Salomon Brothers & Lamont, 26 Broadway, New York, N.Y.

COMPUTER DEDUCTIONS, INC., 100 W. 42nd Street, New York, N.Y. 10036, a company engaged in the business of data processing, filed to register 250,000 shares of common stock.

Proceeds at \$5 per share, intended for the recruitment, orientation, training of six professional and technical personnel, for the design, development, and installation and marketing personnel, for the design, development, and installation of a proprietary computer system, and for the establishment of offices in New York and Washington, D.C. The underwriter is A.J. Butler & Co., 30 Broadway, New York, N.Y. 10004.

NUCLEAR DATA, INC., 100 W. Gulf Road, Schaumburg, Ill., a company engaged in the design, manufacture, and sale of specialized-purpose digital computers and related equi-

ment for collecting, processing, and recording experimental and research data, filed to register 62,500 shares of common stock.

Price is set at \$23.75 per share. Proceeds at \$23.75 per share, intended for the purchase of land, for the establishment of a casino system, for the establishment of a service staff, the development of a new computer system, and at which a supply of major components is maintained, for augmenting the marketing staff, for financing expanded marketing efforts, and for the design and development of computer systems for the nuclear power industry. The underwriters are George Robinson & Co., 5 Hanover Street, an Suite American Corp., 55 Broad St., both of New York, N.Y. 10004.

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DATABASE, INC.

3 Months Ended March 31

1969

Revenue \$676,594

Earnings 29,085

Svr End .07

1968

Revenue \$624,842

Earnings 11,107

Svr End .08

1967

Revenue \$112,855

Earnings 21,210

Svr End .71

ALPHANUMERIC INC.

3 Months Ended March 31

1969

Revenue \$1,969

Earnings 1,490

Svr End .93

1968

Revenue \$1,069

Earnings 700

Svr End .71

1967

Revenue \$1,069

Earnings 600

Svr End .71

ECP

3 Months Ended March 31

1969

Revenue \$943,404

Earnings 17,811

Svr End .02

1968

Revenue \$756,742

Earnings 11,747

Svr End .18

1967

Revenue \$1,968

Earnings 1,000

Svr End .71

AUTOMATIC PROCESSING

9 Months Ended March 31

1969

Revenue \$1,968

Earnings 1,000

Svr End .71

1968

Revenue \$1,069

Earnings 600

Svr End .71

1967

Revenue \$1,069

Earnings 600

Svr End .71

FABRI-TEK, INC.

Year Ended March 28

1969

Revenue \$15,161,145

Earnings 369,463

Svr End .12

1968

Revenue \$13,822,903

Earnings 367,950

Svr End .12

1967

Revenue \$1,069

Earnings 1,000

Svr End .71

BOLTON BERANEK & NEWMAN

9 Months Ended March 31

1969

Revenue \$1,968

Earnings 1,000

Svr End .71

1968

Revenue \$1,069

Earnings 600

Svr End .71

CAVANAUGH LEASING CORPORATION

3 Months Ended March 31

1969

Revenue \$1,968

Earnings 1,000

Svr End .71

1968

Revenue \$1,069

Earnings 600

Svr End .71

COGNITRONICS CORP.

3 Months Ended March 31

1969

Revenue \$727,249

Earnings (66,180)

Svr End .01

1968

Revenue \$622,622

Earnings 13,381

Svr End .01

1967

Revenue \$1,069

Earnings 1,000

Svr End .71

1966

Revenue \$1,069

Earnings 1,000

Svr End .71

1965

Revenue \$1,069

Earnings 1,000

Svr End .71

1964

Revenue \$1,069

Earnings 1,000

Svr End .71

1963

Revenue \$1,069

Earnings 1,000

Svr End .71

1962

Revenue \$1,069

Earnings 1,000

Svr End .71

1961

Revenue \$1,069

Earnings 1,000

Svr End .71

1960

Revenue \$1,069

Earnings 1,000

Svr End .71

LEASO-COMPUTER APPLICATIONS

6 Months Ended March 31

1969

Revenue \$1,968

Earnings 1,000

Svr End .71

1968

Revenue \$1,069

Earnings 600

Svr End .71

1967

Revenue \$1,069

Earnings 600

Svr End .71

1966

Revenue \$1,069

Earnings 600

Svr End .71

1965

Revenue \$1,069

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1947

Revenue \$1,069

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1945

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1944

Revenue \$1,069

Earnings 600

Svr End .71

1943

Revenue \$1,069

Earnings 600

Svr End .71

1942

Revenue \$1,069

Earnings 600

Svr End .71

1941

Revenue \$1,069

Earnings 600

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Earnings 600

Svr End .71

1939

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Earnings 600

Svr End .71

1938

Revenue \$1,069

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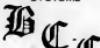
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on page 22

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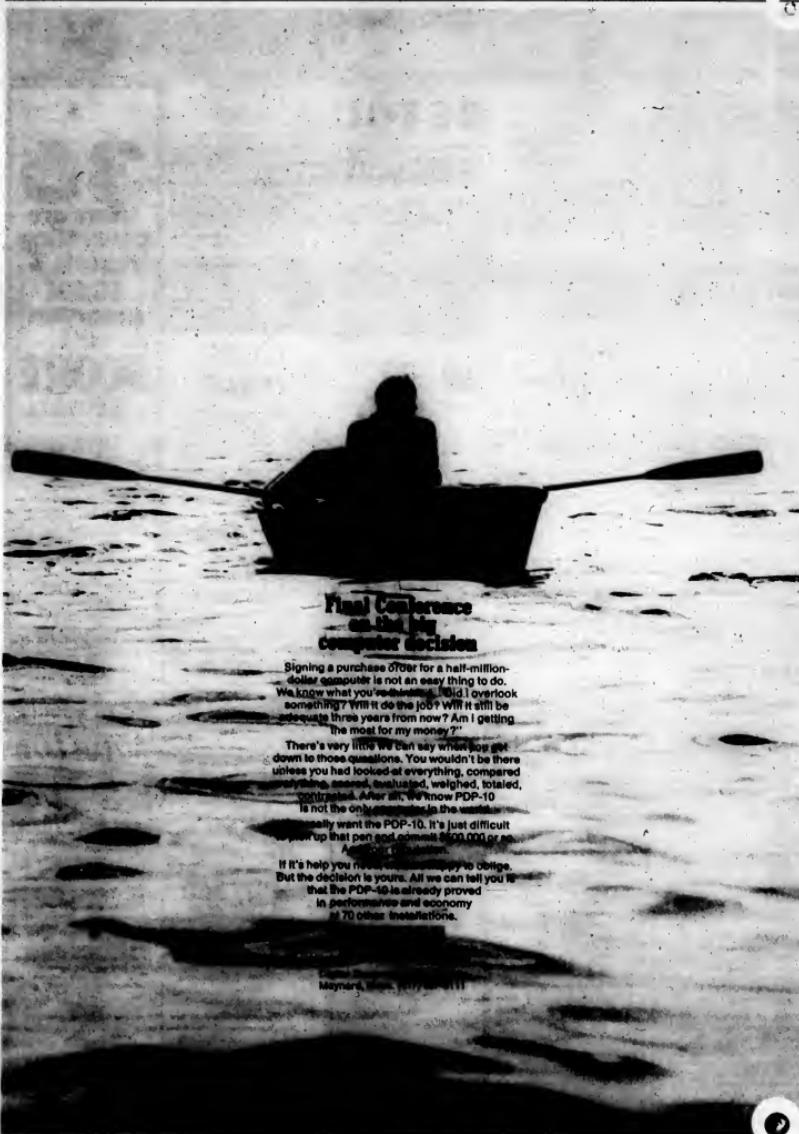
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